

**TABANUS LONGUS, FULVULUS AND SAGAX.**

JAS. S. HINE.

These three species of North American horseflies have proven more or less troublesome from the standpoint of determination on account of their resemblance to one another and the variation among different specimens of each species as well as their general aspect which corresponds very closely with several other species of their genus.

The following combination of general characters will serve well to group the three species in question and separate them from others similar in appearance: the wings are transparent with no vestige of infuscation on the cross veins or furcation of the third vein; no suggestion of a stump of a vein on the anterior branch of the third vein in any of the specimens I have examined; the costal cell is transparent or very pale yellowish; the general color of all specimens is yellowish or brown, never black; the abdomen has a middorsal stripe with a row of spots on each side; these spots are usually rounded and do not reach the hind margins of their respective segments; in *longus* the dorsal stripe is narrow and nearly always abbreviated posteriorly and in rubbed specimens may disappear altogether. The characteristic thing about the middorsal stripe in the three species under consideration is its widening on the posterior margin of each segment thus producing an irregular stripe quite different from the regular stripe in *costalis*, *lineola* and a long list of other North American species.

With the material at hand the opportunity is given for a study of variation. Each of the three species has been divided into series mainly from the standpoint of coloration and size as not much variation in structure is apparent. Coloration appears to be largely a matter of locality and almost invariably specimens from southern regions are decidedly smaller than those taken well north.

The following key should be of use in separating the species here considered:

1. Third segment of the antenna narrow, without a distinct angle near its base on the dorsal side. **sagax.**

Third segment of the antenna wider, with a distinct angle near its base on the dorsal side. 2.

2. Thorax yellowish, without stripes, middorsal abdominal stripe distinct, front in the female narrow, **fulvulus.**

Thorax brown, often faintly striped, middorsal abdominal stripe narrow and usually more or less abbreviated posteriorly, front in the female distinctly wider. **longus.**

**Tabanus sagax** Osten Sacken. Middorsal abdominal stripe usually quite wide and extending the full length of the abdomen. Thorax without stripes, uniformly clothed with gray pollen. Front rather wide, sides nearly parallel; frontal collasity brown, nearly square and with a shining spot above it. Third antennal segment without an angulate prominence at base.

1. Female. This appears to be the form Osten Sacken described as the type of the species. Front rather wide, frontal callosity shining brown, nearly square, almost as wide as the front and with a more or less connected denuded spot above it. Face and front with yellowish gray pollen, the former partially clothed with white down. Palpi stout, pale with black and white hairs intermixed. Antenna yellow with the exception of the annulate portion of the third segment which is clear black, first and second segments with some black hair above, third segment rather long and narrow and without a pronounced basal prominence. Thorax gray or with a shade of yellowish gray and without stripes, wings hyaline, costal border pale yellowish; legs largely yellow, front tibia darker apically on account of the presence of black hairs, front tarsus and tips of the other tarsi more or less brown. Abdomen brown in general color, dorsal stripe nearly white, wide, expanded at the incisures, lateral rows of spots not very conspicuous but apparent on segments two to six inclusive. Length 13-15 mm. Specimens from Illinois, Massachusetts and New Jersey.

2. Female. A second series is composed of similar specimens, the thorax is yellower, the color of the abdomen is lighter brown, the dorsal stripe usually is narrower and the lateral spots are more conspicuous, while the tarsi are not so brown and in some specimens the annulate portion of the third antennal segment is yellow like the basal part or the coloration may vary thru different shades of brown. Length 11-12 mm. Specimens from north western Louisiana.

3. Female. Specimens of a third series are smaller still, the width of the thorax and abdomen is decidedly less than in the other two groups. The general color is a slightly darker brown. The middorsal stripe is quite narrow and the lateral abdominal spots are small altho pronounced. The antennae are entirely yellow or the annulate portion of the third segment is some shade of brown. Length 9-11 mm. Several specimens from De Soto Parish, Louisiana.

**Tabanus fulvulus** Wiedemann. Middorsal abdominal stripe running the entire length of the abdomen, distinct, widened on the posterior border of each segment and with a row of distinct spots on either side. Thorax uniformly pollinose so that no stripes are visible. Front plainly narrower than in either *sagax* or *longus*.

1. Female. Front and face yellowish pollinose, the latter with numerous yellow hairs, frontal callosity shining dark brown with an unconnected elongate shining spot well above it, antenna yellow except the annulate portion of the third segment which is black; basal portion of the third segment with a well marked anlage above. Front narrow, sides nearly parallel. Thorax yellowish gray pollinose concealing the ground color, wing hyaline, costal border dilute yellowish as far as the stigma; legs in large part yellowish, all the femora dark nearly to apex, apical part of each front tibia and whole of each front tarsus dark, extreme apex of each of the other tibiae slightly brownish, all but the base of each of the other tarsi brown. The legs may vary however and in some specimens before me are almost entirely yellowish, other specimens are intermediate in this respect. Abdomen dark brown and yellow or black and yellow, middorsal stripe well marked, widened on the posterior margin of each segment, a row of spots on either side, each spot well defined and more or less surrounded by dark brown or black. Length 13-16 mm. Specimens from District of Columbia, Kentucky, North Carolina and Tennessee. This appears to be the form that Osten Sacken considered as *fulvulus* in his *Prodrome*.

2. Female. This form differs from the above mainly in the greater intensity of color, the yellow is golden and the dark is nearly black. On the abdomen the row of spots on either side of the middorsal stripe takes more or less the form of a zigzag stripe on account of each spot reaching the hind border of its respective segment. Length 13-15 mm. Specimens from St. Simon's Island, Georgia and from Raleigh, North Carolina.

3. Female. Colors paler than in either of the two forms given above, and the size is less. Specimens are decidedly gray in general appearance, the lateral rows of abdominal spots are small and distinct and surrounded by light brown, while the frontal callosity instead of being nearly black is a sort of faded brown. Length about 12 mm. Specimens taken at New Roads Louisiana. At the time specimens were taken it was the only form observed and it appeared to be plentiful. Numerous examples were procured.

4. Female. Size about the same as number 3, altho some specimens are smaller and more slender. The pale legs and entirely yellow antennae are most characteristic for this form. The coloration of the body in general is something like specimens of number 1. Length 10-13 mm. More than a dozen specimens from various localities in Louisiana and Georgia.

***Tabanus longus*** Osten Sacken. Middorsal abdominal stripe very narrow and abbreviated behind in most specimens, spots in the lateral rows small but distinct. Front in the female wider than in the same sex of *fulvulus*, widest at vertex and gradually

narrowed towards the antennae. The width and form of the front and the modest brown and gray colors overlaid with a thin coating of gray pollen are characters which easily separate *longus* from the other two species considered in this paper.

1. Female. This form is considered as corresponding to the typical specimens described by Osten Sacken. Front widest at vertex, gradually narrow toward antennae, frontal callosity pale brown, sometimes darker or even nearly black, higher than wide, with an unconnected spot above, antenna largely yellowish, first two segments clothed with short black hairs, third segment long and narrow with a distinct angle near the base on the dorsal side, annulate portion clear black, cheeks and lower part of the face with silky white hair, palpi white with white and black hairs intermixed. Thorax brown with more or less obscured stripes and gray pollen, wings hyaline, legs largely brown, apex of front tibia, whole front tarsus and apical part of each middle and hind tarsus darkened. Abdomen brown sometimes rather dark, middorsal stripe gray, very narrow, usually abbreviated posteriorly; lateral rows of spots gray, each spot small and usually not reaching either margin of its segment. Length 13-16 mm. Specimens from northern Ohio and Eastern Kansas.

Male. Very much like the female in color. Markings of the abdomen quite distinct. Large and small facets of the eyes plainly differentiated. Length 13-14 mm. Specimens from the same localities as the female.

2. Female. Smaller and of a clearer brown than number 1. Annulate portion of the third segment of the antenna usually brown and not black. In some specimens the middorsal stripe is visible for nearly the entire length of the abdomen and the lateral spots are distinctly larger. Altho structural characters are quite uniform thruout this form and the next appear quite different from typical *longus*. I have noted that in many species of *Tabanus*, southern examples are likely to be smaller and of a clearer brown than northern specimens of the same species. Length 11-14 mm. Specimens from North Carolina and Kansas.

3. Female. This form appears decidedly small but measurement of length hardly indicates it because of the slenderness of the specimens. Coloration and appearance are suggestive of form number 2. The antennae are yellowish to the tip. Length 10-13 mm. Specimens from southwestern Georgia.